WHAT IS CLAIMED IS:

1. An optical network analyzer for measuring an optical characteristic of an object to be measured, comprising:

a first multiplexer for multiplexing a first optical signal which has transmitted the object to be measured, and a second optical signal having a frequency different from the first optical signal, and for outputting a third optical signal;

a first photoelectrical converter for converting the third optical signal into a first electric signal; and

a phase measurement block for comparing phases of the first electric signal and a first reference signal.

2. The optical network analyzer as claimed in claim 1, further comprising:

a light source for generating a fourth optical signal;

a first demultiplexer for demultiplexing the fourth optical signal and for outputting the first optical signal and the second optical signal;

a first reference signal generating section for generating the first reference signal; and

a frequency converter for converting a frequency of the second optical signal based on the first reference signal.

3. The optical network analyzer as claimed in claim 2, further comprising:

a first divider for dividing a frequency of the first electric signal; and

a second divider for dividing a frequency of the first reference signal, wherein

said phase measurement block receives the first electric

signal, of which the frequency is divided by said first divider, and the first reference signal, of which the frequency is divided by said second divider, and compares the phases of the first electric signal and the first reference signal.

4. The optical network analyzer as claimed in claim 3, further comprising an amplitude measurement section for receiving the first electric signal converted by said first photoelectrical converter, and for measuring amplitude of the first optical signal which has transmitted the object to be measured.

5. The optical network analyzer as claimed in claim 2, further comprising:

a first divider for dividing a frequency of the first electric signal; and

a reference signal generating section for generating a reference signal, wherein

said first reference signal generating section generates the first reference signal and the second reference signal based on the reference signal, and

said phase measurement block receives the first electric signal, of which the frequency is divided by said first divider, and the second reference signal generated by said first reference signal generating section, and compares the phases of the first electric signal and the second reference signal.

6. The optical network analyzer as claimed in claim 3, further comprising:

a second reference signal generating section for generating a second reference signal;

a first multiplier for converting a frequency of the first

electric signal based on the second reference signal;

a first filter for passing a predetermined frequency component of the first electric signal of which the frequency is converted by said first multiplier;

a second multiplier for converting a frequency of the first reference signal based on the second reference signal; and

a second filter for passing a predetermined frequency component of the first reference signal, of which the frequency is converted by said second multiplier, for extracting the first reference signal, wherein

said first divider divides the frequency of the first electric signal which has passed through said first filter, and said second divider divides the frequency of the first reference signal which has passed through said second filter.

7. The optical network analyzer as claimed in claim 1, further comprising:

a second multiplexer for multiplexing a fourth optical signal reflected from the object to be measured and a fifth optical signal having a frequency different from the fourth optical signal, and for outputting a sixth optical signal; and

a second photoelectrical converter for converting the sixth optical signal into a second electric signal, wherein

said phase measurement block further compares phases of the second electric signal and the first reference signal.

8. The optical network analyzer as claimed in claim 7, further comprising:

a light source for generating a seventh optical signal;

a first demultiplexer for demultiplexing the seventh optical signal and for outputting the first optical signal and an eighth

optical signal;

a directional coupler, being provided between said first demultiplexer and the object to be measured, for allowing the fourth optical signal, which has been reflected from the object to be measured by outputting the first optical signal to the object to be measured, to pass through said directional coupler;

a first reference signal generating section for generating a first reference signal;

a frequency converter for converting a frequency of the eighth optical signal based on the first reference signal; and

a second demultiplexer for demultiplexing the eighth optical signal, of which the frequency is converted, to the second optical signal and the fifth optical signal.

9. The optical network analyzer as claimed in claim 8, further comprising:

a first divider for dividing a frequency of the first electric signal;

a second divider for dividing a frequency of the second electric signal; and

a third divider for dividing a frequency of the first reference signal, wherein

said phase measurement block receives the first electric signal, of which the frequency is divided by said first divider, the second electric signal, of which the frequency is divided by said second divider, and the first reference signal, of which the frequency is divided by said third divider, and compares phases of the first electric signal and the first reference signal, and phases of the second electric signal and the first reference signal.

10. The optical network analyzer as claimed in claim 9, further

comprising an amplitude measurement section for receiving the first electric signal converted by said first photoelectrical converter and the second electric signal converted by said second photoelectrical converter, and for measuring amplitude of the first optical signal which has transmitted the object to be measured and the fourth optical signal reflected from the object to be measured.

11. The optical network analyzer as claimed in claim 7, further comprising:

a first divider for dividing a frequency of the first electric signal;

a second divider for dividing a frequency of the second electric signal; and

a reference signal generating section for generating a reference signal, wherein

said first reference signal generating section generates the first reference signal and the second reference signal based on the reference signal, and

said phase measurement block receives the first electric signal, of which the frequency is divided by said first divider, the second electric signal, of which the frequency is divided by said second divider, and the second reference signal generated by said first reference signal generating section, and compares phases of the first electric signal and the second reference signal, and phases of the second electric signal and the second reference signal.

12. The optical network analyzer as claimed in claim 1, further comprising:

a light source for generating a fourth optical signal;

a first demultiplexer for demultiplexing the fourth optical signal and for outputting the first optical signal and the second optical signal;

a first reference signal generating section for generating a first reference signal; and

a frequency converter for converting a frequency of the first optical signal, which has transmitted the object to be measured, based on the first reference signal.

13. An optical network analyzer for measuring an optical characteristic of an object to be measured, comprising:

a first multiplexer for multiplexing a first optical signal which has transmitted the object to be measured, and a second optical signal having a frequency different from the first optical signal, and for outputting a third optical signal;

a first photoelectrical converter for converting the third optical signal into a first electric signal;

a second multiplexer for multiplexing a fourth optical signal having substantially the same frequency as the first optical signal, and a fifth optical signal having substantially the same frequency as the second optical signal, and for outputting a sixth optical signal;

a second photoelectrical converter for converting the sixth optical signal into a second electric signal; and

a phase measurement block for comparing phases of the first electric signal and the second electric signal.

14. The optical network analyzer as claimed in claim 13, further comprising:

a light source for generating a seventh optical signal;

a first demultiplexer for demultiplexing the seventh optical

signal and for outputting an eighth optical signal and a ninth optical signal;

a second demultiplexer for demultiplexing the eighth optical signal, and for outputting the first optical signal and the fourth optical signal;

a first reference signal generating section for generating a first reference signal;

a frequency converter for converting a frequency of the ninth optical signal based on the first reference signal; and

a third demultiplexer for demultiplexing the ninth optical signal, of which the frequency is converted, to the second optical signal and a fifth optical signal.

15. The optical network analyzer as claimed in claim 14, further comprising:

a first divider for dividing a frequency of the first electric signal; and

a second divider for dividing a frequency of the second electric signal, wherein

said phase measurement block receives the first electric signal, of which the frequency is divided by said first divider, and the second electric signal, of which the frequency is divided by said second divider, and compares phases of the first electric signal and the second electric signal.

16. The optical network analyzer as claimed in claim 15, further comprising an amplitude measurement section for receiving the first electric signal converted by said first photoelectrical converter and for measuring amplitude of the first optical signal which has transmitted the object to be measured.

17. The optical network analyzer as claimed in claim 16, wherein said amplitude measurement section further receives the second electric signal converted by said second photoelectrical converter, and compares amplitude of the first optical signal and the fourth optical signal.

18. The optical network analyzer as claimed in claim 13, further comprising:

a third multiplexer for multiplexing a seventh optical signal reflected from the object to be measured and an eighth optical signal having substantially the same frequency as the second optical signal, and for outputting a ninth optical signal; and

a third photoelectrical converter for converting the ninth optical signal into a third electric signal, wherein

said phase measurement block further compares phases of the third electric signal and the second electric signal.

19. The optical network analyzer as claimed in claim 18, further comprising:

a light source for generating a tenth optical signal;

a first demultiplexer for demultiplexing the tenth optical signal and for outputting the first optical signal and an eleventh optical signal;

a directional coupler, being provided between said first demultiplexer and the object to be measured, for allowing the seventh optical signal, which has been reflected from the object to be measured by outputting the first optical signal to the object to be measured, and the fourth optical signal, to pass through said directional coupler;

a first reference signal generating section for generating a first reference signal;

a frequency converter for converting a frequency of the eleventh optical signal based on the first reference signal; and

a second demultiplexer for demultiplexing the eleventh optical signal, of which the frequency is converted, to the second optical signal, the fifth optical signal, and the eighth optical signal.

20. The optical network analyzer as claimed in claim 19, further comprising:

a first divider for dividing a frequency of the first electric signal;

a second divider for dividing a frequency of the second electric signal; and

a third divider for dividing a frequency of the third electric signal, wherein

said phase measurement block receives the first electric signal, of which the frequency is divided by said first divider, the second electric signal, of which the frequency is divided by said second divider, and the third electric signal, of which the frequency is divided by said third divider, and compares phases of the first electric signal and the second electric signal, and phases of the second electric signal and the third electric signal.

21. The optical network analyzer as claimed in claim 20, further comprising an amplitude measurement section for receiving the first electric signal converted by said first photoelectrical converter and the third electric signal converted by said third photoelectrical converter, and for measuring amplitude of the first optical signal which has transmitted the object to be measured and the seventh optical signal reflected from the object to be measured.

22. The optical network analyzer as claimed in claim 21, wherein said amplitude measurement section further receives the second electric signal converted by said second photoelectrical converter, and compares amplitude of the first optical signal and the fourth optical signal, and amplitude of the fourth optical signal and the seventh optical signal.

23. The optical network analyzer as claimed in claim 13, further comprising:

a first light source for generating a seventh optical signal;

a first demultiplexer for demultiplexing the seventh optical signal and for outputting the first optical signal and the fourth optical signal;

a second light source for generating the eighth optical signal; and

a second demultiplexer for demultiplexing the eighth optical signal and for outputting the second optical signal and the fifth optical signal.

24. The optical network analyzer as claimed in claim 23, further comprising:

a first divider for dividing a frequency of the first electric signal; and

a second divider for dividing a frequency of the second electric signal, wherein

said phase measurement block receives the first electric signal, of which the frequency is divided by said first divider, and the second electric signal, of which the frequency is divided by said second divider, and compares phases of the first electric signal and the second electric signal.

25. The optical network analyzer as claimed in claim 24, further comprising an amplitude measurement section for receiving the first electric signal converted by said first photoelectrical converter and for measuring amplitude of the first optical signal which has transmitted the object to be measured.

26. The optical network analyzer as claimed in claim 25, wherein said amplitude measurement section further receives the second electric signal converted by said second photoelectrical converter, and compares amplitude of the first optical signal and the fourth optical signal.